

1 What is claimed is:

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3 1. A washing machine comprising:

4 a tub having an open front side;

5 a drum rotatably provided in the tub to hold laundry;

6 a motor rotating the drum;

7 a cabinet having the tub and the motor inside;

8 a control unit controlling a vibration of the tub; and

9 a vibration sensing assembly for sensing the vibration of the tub, the vibration sensing  
10 assembly comprising:

11 a fixing part fixed to an inner wall of the cabinet;

12 a rotational part rotatably connected to the fixing part to perform a  
13 rotational movement within a predetermined range by the vibration of the tub  
14 centering around a portion connected to the fixing part; and

15 a sensor provided to the rotational part to sense the rotational  
16 movement of the rotational part.

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18 2. The washing machine as claimed in claim 1, wherein the fixing part  
19 comprises;

20 a fixing body fixed to the inner wall of the cabinet,

21 a first rotational connecting portion connected in one body to the fixing body and  
22 rotatably connected to one side of the rotational part, and

23 a first stopper provided to interrupt the rotational movement of the rotational part so  
24 that the rotational part performs the rotational movement within the predetermined range only.

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26           3.       The washing machine as claimed in claim 2, wherein the first rotational  
27 connecting portion comprises an insertion hole in which a rotational center of the rotational  
28 part is inserted.

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30           4.       The washing machine as claimed in claim 3, wherein the fixing part further  
31 comprises a first elastic member returning the rotational part to an original position.

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33           5.       The washing machine as claimed in claim 4, wherein the first elastic member  
34 comprises a first coil spring having one end connected to the fixing body or the first stopper  
35 and the other end connected to the rotational part.

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37           6.       The washing machine as claimed in claim 2, wherein the fixing body is fixed  
38 to the inner wall of the cabinet by at least one hook.

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40           7.       The washing machine as claimed in claim 2, wherein the rotational part  
41 comprises;

42               a second rotational connecting portion rotatably connected to the first rotational  
43 connecting portion of the fixing part to be a rotational center, and

44               a rotational body having one end connected to the second rotational connecting  
45 portion to rotate according to the vibration of the tub centering around the second rotational  
46 connecting portion.

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48           8.       The washing machine as claimed in claim 7, wherein the rotational body

comprises a vibration transferring portion provided to an opposite side of the second rotational connecting portion to transfer the vibration of the tub to the rotational body.

9. The washing machine as claimed in claim 8, wherein the rotational body comprises;

a first rotational body having one side rotatably connected to the second rotational connecting portion, and

a second rotational body having one side connected to the other side of the first rotational body and the other side having the vibration transferring portion.

10. The washing machine as claimed in claim 9, wherein the first rotational body comprises;

a second stopper having the second rotational body rotate within a predetermined range, and

a third rotational connecting portion to which one side of the second rotational body is rotatably connected.

11. The washing machine as claimed in claim 10, wherein the first rotational body further comprises a second elastic member returning the second rotational body to its original position.

12. The washing machine as claimed in claim 11, wherein the second elastic member comprises a second coil spring having one end connected to the second stopper and the other end connected to the second rotational body.

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74           13.     The washing machine as claimed in claim 12, wherein the second rotational  
75 body comprises;

76           a fourth rotational connecting portion connected to the third rotational connecting  
77 portion to become a rotational center, and

78           a sensor receiving portion receiving the sensor therein.  
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80           14.     The washing machine as claimed in claim 13, wherein the sensor receiving  
81 portion is provided to an upper surface of the second rotational body.  
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83           15.     The washing machine as claimed in claim 1, wherein the sensor comprises;  
84           a ball type rolling body moving in a reverse direction of a movement of the rotational  
85 body according to the vibration of the tub,

86           a case providing a space for holding the rolling body, and

87           a movement sensing unit for sensing a movement of the rolling body.  
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89           16.     The washing machine as claimed in claim 15, wherein a vertical cross-  
90 section of the inner space of the case is circular or oval.  
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92           17.     The washing machine as claimed in claim 15, wherein the movement sensing  
93 unit comprises;

94           a signal transmitting part provided to one side of an inner wall of the case, and

95           a signal receiving part provided to the other side confronting the signal transmitting  
96 part to receive a signal transmitted from the signal transmitting part.

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98           18.     The washing machine as claimed in claim 1, wherein the vibration sensing  
99 assembly is coupled to the inner wall of a rear side of the cabinet in rear of the tub.

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101           19.     The washing machine as claimed in claim 18, wherein the tub comprises a  
102 protruding plate provided in the vicinity of a lateral side of the rotational par, the protruding  
103 plate protruding in a rear direction to transfer a right-to-left vibration of the tub to the  
104 rotational part.

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